

Unit 4 Lesson 2D Classwork/Homework

SECTION 4.3 Trigonometry Extended: The Circular Functions

Complete circled problems

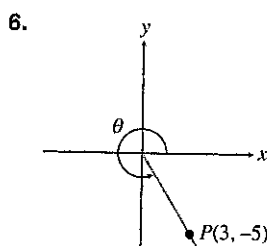
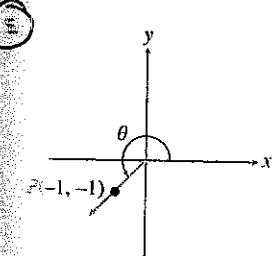
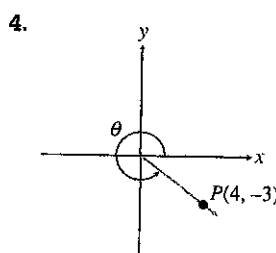
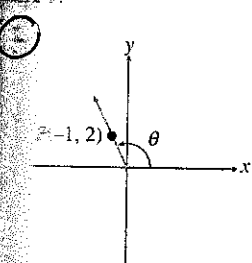
SECTION 4.3 EXERCISES

Exercises 1 and 2, identify the one angle that is not coterminal with the others.

1. $50^\circ, 510^\circ, -210^\circ, 450^\circ, 870^\circ$

2. $\frac{5\pi}{3}, \frac{5\pi}{3}, \frac{11\pi}{3}, \frac{7\pi}{3}, \frac{365\pi}{3}$

Exercises 3–6, evaluate the six trigonometric functions of the angle θ .



Exercises 7–12, point P is on the terminal side of angle θ . Evaluate the six trigonometric functions for θ . If the function is undefined, write "undefined."

7. $P(3, 4)$ 8. $P(-4, -6)$
9. $P(0, 5)$ 10. $P(-3, 0)$
11. $P(5, -2)$ 12. $P(22, -22)$

Exercises 13–16, state the sign (+ or -) of (a) $\sin t$, (b) $\cos t$, and (c) $\tan t$ for values of t in the interval given.

13. $(0, \frac{\pi}{2})$ 14. $(\frac{\pi}{2}, \pi)$
15. $(\pi, \frac{3\pi}{2})$ 16. $(\frac{3\pi}{2}, 2\pi)$

Exercises 17–20, determine the sign (+ or -) of the given value without the use of a calculator.

17. $\cos 143^\circ$ 18. $\tan 192^\circ$
19. $\cos \frac{7\pi}{8}$ 20. $\tan \frac{4\pi}{5}$

Exercises 21–24, choose the point on the terminal side of θ .

21. $\theta = 45^\circ$
(a) $(2, 2)$ (b) $(1, \sqrt{3})$ (c) $(\sqrt{3}, 1)$

22. $\theta = \frac{2\pi}{3}$
(a) $(-1, 1)$ (b) $(-1, \sqrt{3})$ (c) $(-\sqrt{3}, 1)$

23. $\theta = \frac{7\pi}{6}$
(a) $(-\sqrt{3}, -1)$ (b) $(-1, \sqrt{3})$ (c) $(-\sqrt{3}, 1)$

24. $\theta = -60^\circ$
(a) $(-1, -1)$ (b) $(1, -\sqrt{3})$ (c) $(-\sqrt{3}, 1)$

In Exercises 25–36, evaluate without using a calculator by using a reference triangle.

25. $\cos 120^\circ$ 26. $\tan 300^\circ$
27. $\sec \frac{\pi}{3}$ 28. $\csc \frac{3\pi}{4}$
29. $\sin \frac{13\pi}{6}$ 30. $\cos \frac{7\pi}{3}$
31. $\tan -\frac{15\pi}{4}$ 32. $\cot \frac{13\pi}{4}$
33. $\cos \frac{23\pi}{6}$ 34. $\cos \frac{17\pi}{4}$
35. $\sin \frac{11\pi}{3}$ 36. $\cot \frac{19\pi}{6}$

In Exercises 37–42, find (a) $\sin \theta$, (b) $\cos \theta$, and (c) $\tan \theta$ for the given quadrantal angle. If the value is undefined, write "undefined."

37. -450° 38. -270°
39. 7π 40. $\frac{11\pi}{2}$
41. $-\frac{7\pi}{2}$ 42. -4π

In Exercises 43–48, evaluate without using a calculator.

43. Find $\sin \theta$ and $\tan \theta$ if $\cos \theta = \frac{2}{3}$ and $\cot \theta > 0$.
44. Find $\cos \theta$ and $\cot \theta$ if $\sin \theta = \frac{1}{4}$ and $\tan \theta < 0$.
45. Find $\tan \theta$ and $\sec \theta$ if $\sin \theta = -\frac{2}{5}$ and $\cos \theta > 0$.
46. Find $\sin \theta$ and $\cos \theta$ if $\cot \theta = \frac{3}{7}$ and $\sec \theta < 0$.
47. Find $\sec \theta$ and $\csc \theta$ if $\cot \theta = -\frac{4}{3}$ and $\cos \theta < 0$.
48. Find $\csc \theta$ and $\cot \theta$ if $\tan \theta = -\frac{4}{3}$ and $\sin \theta > 0$.